

Name Key

Date \_\_\_\_\_

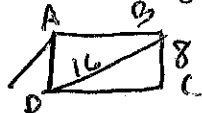
# Area Review worksheet 201

Rectangle:  $= bh$   
 Parallelogram:  $= bh$   
 Square:  $= s^2$   
 Triangle:  $= (1/2) bh$   
 Trapezoid:  $= \frac{1}{2} h(b_1 + b_2)$   
 Rhombus:  $= \frac{1}{2} d_1 \cdot d_2$   
 Kite:  $= \frac{1}{2} d_1 \cdot d_2$   
 Circle:  $= \pi r^2$   
 Reg. Polygon:  $= \frac{1}{2} ap$   
 Sector:  $= (N/360) \pi r^2$

Figures may not be drawn to scale. Do not forget to include units.

1. If the area of rectangle ABCD =  $450\text{cm}^2$ , and AD =  $12.5\text{cm}$ , find DC.

2. In rectangle ABCD, BC =  $8\text{mm}$ , BD =  $16\text{mm}$ . Find the area.



$$16^2 = 8^2 + DC^2$$

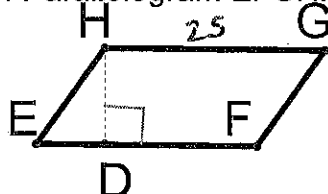
$$142 = DC^2$$

$$DC = 8\sqrt{3}$$

$$A = 8 \cdot 8\sqrt{3}$$

$$A = 64\sqrt{3} \text{ mm}^2$$

3. Parallelogram EFGH, EF =  $25\text{cm}$ , Area =  $250\text{cm}^2$ , find HD.



$$250 = 25h$$

$$10\text{cm} = h$$

4. Equilateral triangle ABC. AC =  $2\text{cm}$ . Find the area.

$$\frac{2^2\sqrt{3}}{4} = A = \sqrt{3} \text{ cm}^2$$

Use the rhombus to the right for #s 5-9

5.  $m\angle EPA = 90$

6. NA = 16; RE = 20; Area =  $160\text{u}^2$   $\frac{1}{2} 16 \cdot 20$

7. NA = 20; Area = 180; RE =  $18\text{u}$   $180 = \frac{1}{2} 20 \cdot RE$

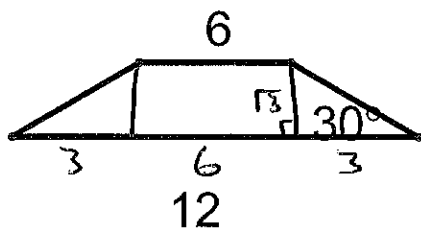
8. NA = 5; RP = 6; Area =  $30\text{u}^2$   $A = \frac{1}{2} 5 \cdot 12$

9. NE = 10; RE = 16; NP =  $6$ ; Area =  $96\text{u}^2$

$$10^2 = 8^2 + NP^2$$

$$A = \frac{1}{2} 12 \cdot 16$$

10. Given the isosceles trapezoid. Area =  $9\sqrt{3}\text{u}^2$



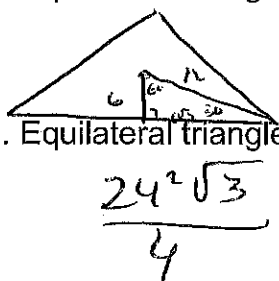
$$\frac{30}{\sqrt{3}} \mid \frac{60}{3} \mid 20$$

$$A = \frac{1}{2} \sqrt{3} (6+12)$$

11. Equilateral triangle with a radius of 12. Area =  $108\sqrt{3}\text{u}^2$

$$\frac{1}{2} 6 \cdot 36\sqrt{3}$$

12. Equilateral triangle with one side of 24. Area =  $144\sqrt{3}\text{u}^2$



$$\frac{24^2\sqrt{3}}{4}$$

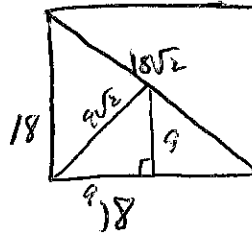
13. The diagonal of a square is  $18\sqrt{2}$ .

One side =  $18u$

Apothem =  $9u$

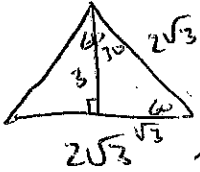
Perimeter =  $72u$

Area =  $324u^2$



14. The perimeter of a regular hexagon is  $12\sqrt{3}$ . Find the area.

$$A = \frac{1}{2} \cdot 3 \cdot 12\sqrt{3} = 18\sqrt{3} u^2$$

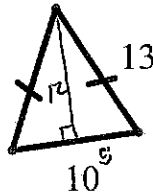


15. Find the area of the triangle.

$$13^2 = 5^2 + h^2$$

$$12 = h$$

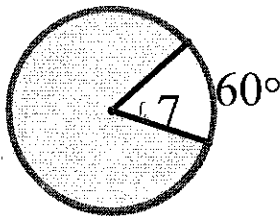
$$A = \frac{1}{2} \cdot 12 \cdot 10 = 60 u^2$$



For #s 16-20, find the **probability** that a point chosen at random would lie in the shaded region.

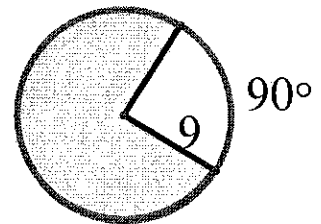
16.  $p = .83$

$$\frac{300}{360}$$

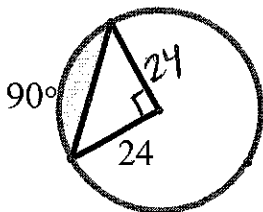


17.  $p = .75$

$$\frac{270}{360}$$



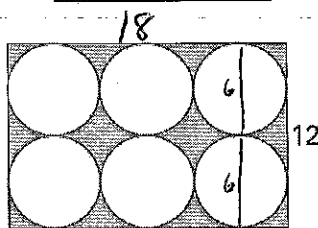
18.  $.09$



$$\frac{A_{\text{sector}} - A_{\Delta}}{A_{\text{circle}}}$$

$$\frac{\frac{90}{360} \cdot 24^2 \pi - \frac{1}{2} \cdot 24 \cdot 24}{24^2 \pi}$$

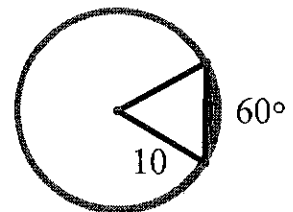
19.  $.21$



$$\frac{A_{\text{rect}} - 6 \cdot A_{\text{circle}}}{A_{\text{rect}}} = \frac{(12 \cdot 18) - 6(4\pi)}{12 \cdot 18}$$

$$\frac{164.4}{576\pi} = .09$$

20.  $.03$



$$\frac{A_{\text{sect}} - A_{\Delta}}{A_{\text{circle}}}$$

$$\frac{\frac{60}{360} \cdot 100\pi - \frac{100\sqrt{3}}{4}}{100\pi}$$

$$\frac{9.059}{(100\pi)} \approx .0288$$

$C_4 = r = 4$   
 $r = 3$   
 $r = 2$   
 $r = 1$

Find the area of the shaded region.

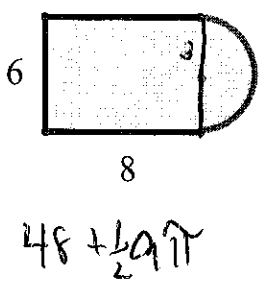
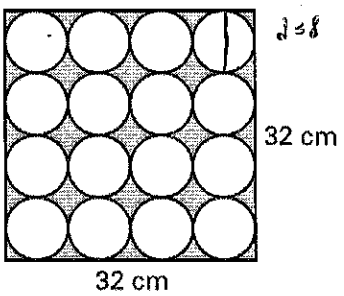
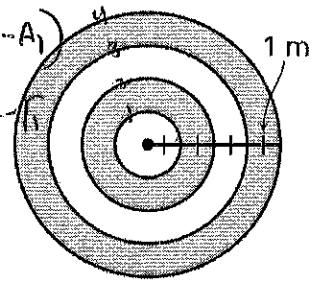
21.  $10\pi \text{ m}^2$

$A_{\text{sh}} = 16(\text{Area})$   
 $32^2 = 16(16\pi)$

22.  $219.8 \text{ cm}^2$

23.  $62.1 \text{ u}^2$

$(A_4 - A_3) + (A_2 - A_1)$   
 $16\pi - 9\pi$   
 $7\pi + 3\pi$   
 $10\pi$

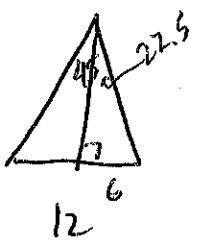
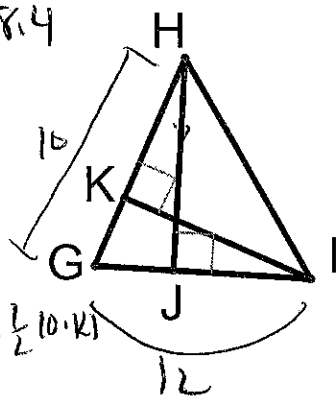
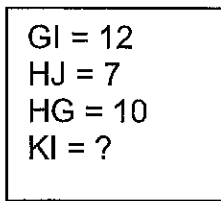
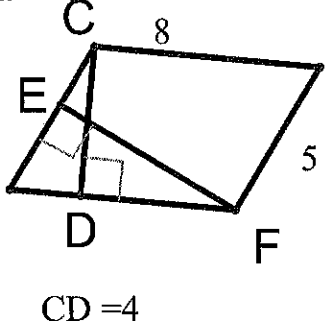


Find the area, and then find the indicated length.

24.  $A = 32 \text{ u}^2$   $EF = 6.4$

25.  $A = 42$   $KI = 8.4$

$A = 32$   
 $32 = 5h$   
 $6.4$



Find the area of the given regular polygon.

26.  $A = 695.3 \text{ cm}^2$   
Octagon  
 $P = 96 \text{ cm}$

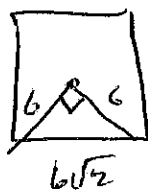
27.  $247.7 \text{ u}^2$   
Pentagon  
side = 12

28.  $72 \text{ u}^2$   
Square  
 $r = 6$

$\tan 22.5 = \frac{6}{a}$   
 $a = 14.5$   
 $A = \frac{1}{2} 14.5 (96)$

$\tan 36 = \frac{12}{a}$   
 $a = 8.3$

$A = \frac{1}{2} 8.3 (12 \cdot 5)$

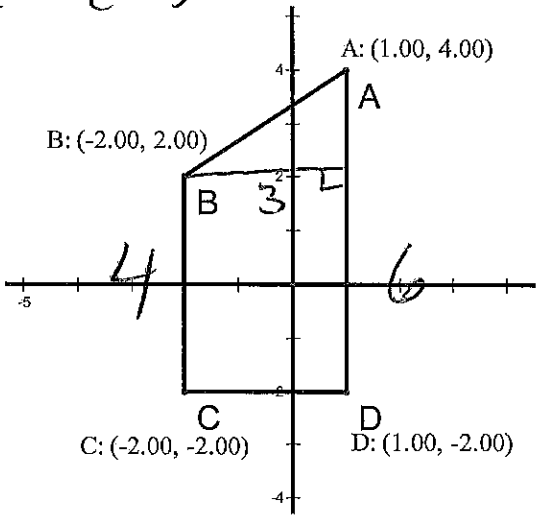


$(6\sqrt{2})^2$

Find the area of the figure.

29.  $15 \text{ u}^2$

$A = \frac{1}{2} 3 (4 + 6)$   
 $15$



30.

$$m\angle CBA = 45^\circ$$

$\overline{AE}$  and  $\overline{CD}$  are altitudes.

$$AC = 13$$

$$AD = 5$$

Find CD. 12

$$13^2 = 5^2 + CD^2$$

Find BD. 12

$$45^\circ 45^\circ 90^\circ \triangle CDB$$

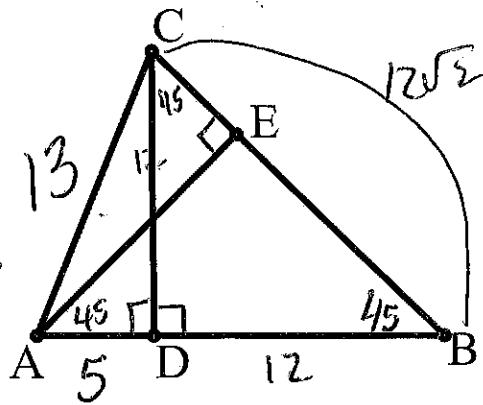
Find Area. 102

$$\frac{1}{2}(12)(17)$$

Find BC.  $12\sqrt{2}$

$$45^\circ 45^\circ 90^\circ$$

Find AE. 12.02



$$A = \frac{1}{2}bh$$

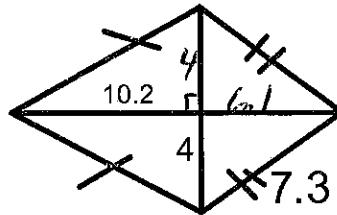
$$102 = \frac{1}{2}(12\sqrt{2}) \cdot AE$$

$$\frac{102}{6\sqrt{2}} = \frac{12\sqrt{2}}{2}$$

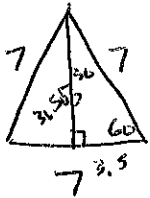
31. 65.2 Find the area of the kite.

$$7.3^2 = 4^2 + x^2$$

$$6.1 = x$$



$$A = \frac{1}{2}d_1 \cdot d_2 = \frac{1}{2}(16.3)(8)$$



32.  $73.5\sqrt{3}$  Find the area of a hexagon;  $r = 7$  cm

$$p = 42 \quad \frac{1}{2} \cdot 3.5\sqrt{3} \cdot 42 \approx 127.3$$

33.  $b = 16$  cm  $d = 34$  cm

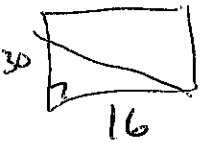
Rectangle

$$A = 480$$

$$h = 30$$

$$b = ?$$

$$\text{diagonal} = ? \quad 34$$

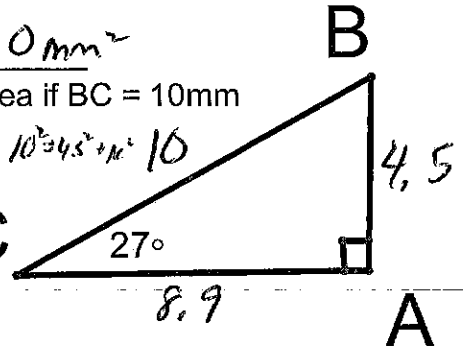


34.  $A = 20.0$  mm<sup>2</sup>

Find the area if  $BC = 10$  mm

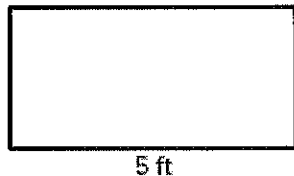
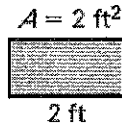
$$\sin 27^\circ = \frac{AB}{10} \quad 10^2 = 4.5^2 + 10^2$$

$$A = \frac{1}{2} \cdot 8.9 \cdot 4.5$$



Corresponding lengths in similar figures are given. Find the ratios (shaded to unshaded) of the perimeters and areas. Find the unknown area.

35.



$$R.P = \frac{2}{5}$$

$$R.A = \frac{4}{25}$$

$$\frac{4}{25} = \frac{2}{A}$$

$$12.5 = A \text{ ft}^2$$

36.



$$R.P = \frac{14}{20} = \frac{7}{10}$$

$$R.A = \frac{49}{100}$$

$$\frac{49}{100} = \frac{A}{400}$$

$$A = 196 \text{ in}^2$$